eerve
8
9p

LIBRARY
CURRENT SERIAL RECORD
FEB 12 1948
U. S. DEPARTMENT OF AGRICULTURE
4592

THE PLANT DISEASE REPORTER

Issued By

THE PLANT DISEASE SURVEY

Division of Mycology and Disease Survey
BUREAU OF PLANT INDUSTRY, SOILS, AND AGRICULTURAL ENGINEERING
AGRICULTURAL RESEARCH ADMINISTRATION
UNITED STATES DEPARTMENT OF AGRICULTURE

Volume 32 Number 1

January 15, 1948

The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Division of Mycology and Disease Survey serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

THE PLANT DISEASE REPORTER

Issued by

THE PLANT DISEASE SURVEY
DIVISION OF MYCOLOGY AND DISEASE SURVEY

Plant Industry Station — Beltsville, Maryland
Volume 32 — January 15, 1948 — Number 1

IN THIS ISSUE

Announcement of arrangements to publish disease-control data on performance of newer fungicides as a Plant Disease Reporter Supplement, page 2.

The ring spot and lace leaf virus disease complex seems the outstanding trouble affecting sweet cherries in Western Montana, according to M. M. Afanasiev and H. E. Morris, page 3.

George M. Darrow reports ratings of blackberry varieties for resistance to cane rust, page 5.

Incidence of nut tree diseases in Oregon and Washington in 1947 is reported by P. W. Miller, page 6.

A disease resembling strawberry witches'-broom is reported from Wisconsin by George M. Darrow, page 8.

D. E. Ellis and C. N. Clayton report a severe outbreak of Mycosphaerella rosigena on greenhouse roses in North Carolina, page 9.

Curvularia spot, a new disease, caused considerable trouble in some Florida commercial gladiolus areas this summer, according to Robert O. Magie, page 11.

Control of a Texas outbreak of rust on Calendula with Fermate is reported by E. M. Hildebrand and W. L. Vitopil, page 13.

Roy Bardin sends a further note on celery crack-stem in the Salinas Valley, page 15.

S. B. Fenne reports incidence of tobacco diseases in Virginia in 1947, page 16.

E. M. Hildebrand records some noteworthy disease occurrences in Texas, page 19.

Bowen S. Crandall and Javier Dieguez C. have compiled a check list of economic plant diseases in the Tingo Maria zone of Peru, page 20.

Check list revision, by Freeman Weiss, page 28.

November weather, page 41.

PUBLICATION OF FUNGICIDE TESTS

To plant pathologists in the United States and Canada.--In 1945 and again in 1946 a committee appointed by the Potomac Division of the American Phytopathological Society, undertook the task of collecting, classifying, summarizing and mimeographing disease-control data generously contributed by pathologists throughout the United States and Canada. This summary was based on the performance of the new fungicides used as soaks, dips, sprays, dusts, aerosols, fumigants or drenches for seeds, vegetation, bulbs, tubers, corms, roots, cuttings, or slips of different types of crops, or for disinfection of seed beds and field soils.

These two reports, although limited in general distribution, were awarded such enthusiastic recognition from different quarters that the national body of the American Phytopathological Society at its 1946 meeting at Cincinnati, Ohio, voted to continue this work through its special committee on fungicides. In order to give the finished 1947 report wider circulation and thus make it useful to a greater number of workers, arrangements have been made to publish it as a Plant Disease Reporter Supplement. Therefore, all workers who have obtained results on the performance of fungicides during 1947, or who have results that were not included in the 1945 and 1946 summaries, are urged to participate in the 1947 summation. The information sent in should include: Name and address of worker, crop, diseases combated, materials tested, along with the concentration or rate of application used, and the rating or relative efficiency of the different materials with regard to emergence, stand, disease control, injury, and yield.

To simplify the task for those who can cooperate, as well as for the committee in compiling the summary, report forms have been prepared and are being sent to previous cooperators in various experiment stations throughout the United States and Canada. One sheet should be used for any one disease on any one crop. Additional forms can be obtained by writing to Paul R. Miller, Plant Industry Station, Beltsville, Md., to whom all completed forms are to be sent.

It should be emphasized that the inclusion of these preliminary comparative results in this summation will not in the least detract from the general interest in the worker's detailed data when he publishes them later but, on the contrary, should add to it. Each cooperator is in reality a coauthor of this summation report and, of course, will be given credit for his contribution to it.

The Committee - Howard P. Barss, Chairman, E. E. Clayton, M. C. Goldsworthy, R. J. Haskell, J. W. Heuberger, R. W. Leukel, W. D. McClellan, and Paul R. Miller.

DISEASES OF SWEET CHERRIES IN WESTERN MONTANA

M. M. Afanasiev and H. E. Morris

During the summers of 1946 and 1947, detailed surveys were made of diseases of sweet cherries in several orchards located on the East Shore of Flathead Lake in Montana. Particular attention was paid to different viroses and bud and scion perpetuated diseases of sweet cherries. Other diseases of sweet cherries, which are caused by fungi, bacteria or which are due to physiological disorders were also observed and recorded.

The majority of surveyed trees were Lambert or Bing, which are the main commercial varieties grown in Montana. A few trees of Deacon, May Duke, Black Republican, Stark Golden, Waterhouse, Royal Ann, Black Tartarian, and Centennial were also examined. These cherry varieties are used primarily as pollenizers for Lamberts and Bings.

The following viroses were found on sweet cherries: mottle leaf, rusty mottle, rasp, and the ring-spot and lace-leaf complex. Mottle leaf, rusty mottle and rasp viroses were present only in traces, but the ring-spot and lace-leaf complex virosis occurred on more than 10 percent of the surveyed cherry trees. The ring-spot and lace-leaf complex was found on practically all varieties of cherries, and especially on the pollenizing varieties, which appear to be more susceptible to this disease than either Bing or Lambert. May Duke and Stark Golden are especially susceptible to this disease.

The intensity of the symptoms of mottle leaf, rusty mottle, rasp, and ring-spot and lace-leaf diseased trees did not change much from June to September. The maximum symptoms of all these diseases were present in June at the time when the earliest surveys were made. The trees affected by mottle leaf diseases had a good set of cherries, although they were small, dry in consistency and insipid. The fruits on trees affected by rusty mottle do not mature properly and those affected by rasp show some deformity. The yield and the quality of the fruit of the trees affected by the ring-spot and lace-leaf complex was in direct relationship to the degree of severity of the disease. Slightly affected trees had practically normal fruit and those severely affected had small cherries which ripened prematurely.

No twisted leaf or little cherry viroses of sweet cherries have been found in Montana orchards.

Among bud and scion perpetuated diseases of sweet cherries, crinkle was found on a number of trees. The symptoms of this disease were at their maximum of development in June. Although the trees affected by

this disease usually bloom well, the set of cherries is always small. The fruit is usually conical, insipid and has a deepened suture.

There is some evidence that deep suture disease of sweet cherries is also present in Montana.

Among other diseases and disturbances of sweet cherries the following ones were observed.

Many trees showed a general interveinal mottling of leaves. This type of mottling is usually more pronounced during the first part of the summer than later in the season. This type of mottling is probably purely physiological in nature.

Blotchy mottling was also observed. This mottling is distributed rather irregularly over the leaf blade and remains at the same intensity until the end of the season. The nature of this mottling is unknown.

Unseasonal yellowing of leaves, defoliation, rolling, curling of leaves and dying of spurs on cherry trees were also observed. All these conditions are undoubtedly associated with abnormal growth conditions of cherry trees and probably with deficient moisture.

Numerous leaves on many cherry trees showed small (2-5 mm in diameter) dark brown to black spots surrounded by light-brown halos. Later the central part of the spot usually dropped off producing a shot hole effect. The number of these spots was not great enough to affect the productivity of the cherry trees. These types of spots are called "frog eyes".

A number of trees in various orchards were affected by a peculiar disturbance somewhat resembling "spray-like" injury. During the first season only a few leaves show leaf burning, then it gradually involves a larger number of leaves. During the second season usually some of the affected branches begin to die and gradually the whole tree dies within two or three years. Apparently this condition is connected with unfavorable growth conditions and possibly with some soil-borne infections of roots or crowns or both.

Silver leaf disease of sweet cherries was noted and is important in areas where cherry trees are grown in low, wet areas with poor drainage.

Numerous cherry trees also showed winter scalds, gummosis and various mechanical injuries mainly due to damage by bear or deer.

MONTANA STATE COLLEGE, AGRICULTURAL EXPERIMENT STATION, BOZEMAN

708630

RESISTANCE OF BLACKBERRIES TO CANE RUST AT BELTSVILLE, MARYLAND--1947

George M. Darrow

Cane rust (Kuehneola uredinis (Lk) Arth.) especially on the leaves, seems to have become more prevalent during the past few years in the testing grounds of the U. S. Department of Agriculture at Beltsville, Md., possibly because of new strains of the fungus. It has become so severe that a selection--US-459 (Eldorado x self)--heretofore thought worthy of introduction has become unproductive, with both flower clusters and canes dying back. The rust even shows on the fruit of this selection.

In October when the rust was at its worst, the following ratings on the blackberries were made.

Ratings of blackberries and hybrids at Beltsville for cane rust resistance (10 = entirely free, 5 = severe leaf damage, 1 = parts of plant dying).

Variety or selection	Rating
Austin Thornless	10
Boysen	10
Brainerd	10
Burbank Thornless	10
Cameron	10
Cory (Bowenberry)	10
Early Harvest	9
Eldorado	3
Foster	1
Jumbo	1
Kittatinny	3
Lawton	1
Merton Early	10
" Thornless	10
Nanticoke	10
Nessberry (blackberry x raspberry)	10
Oregon Evergreen	10
Rubus species 131870	10
2 Rubus pubescens (from Michigan)	10
1 " innominatus	10
Texas 40-51=Bigness	10
" 40-78	10
" 40-181	10
" 40-202=Regalness	10

Of the blackberries derived from eastern species, Nanticoke was free while Eldorado, Foster, Jumbo, Kittatinny, and Lawton were very susceptible. The Oregon Evergreen, Burbank Thornless, Merton Early, Merton Thornless, and those varieties and selections derived in part from the Himalaya [Brainerd, 3 of (Boysen x Brainerd) open, 1 of Eldorado x Himalaya, 1 of Eldorado x Himalaya selfed, 2 of Himalaya x Oregon Evergreen, and 7 of Himalaya x Austin Thornless] were free, thus indicating that such European blackberries as were available for observations are highly resistant.

Among varieties derived in part from the Pacific Coast trailing blackberry, Cory, Cameron, and Boysen were free. In the Logan x Jumbo seedlings, with Jumbo highly susceptible, 15 were free, 1 partially resistant, and 4 highly susceptible. All the crossbreds of Elmer Johnson x Himalaya (6), Elmer Johnson x Lucretia (3), and Elmer Johnson x Boysen (3) were free. The one seedling selection of (Logan x Austin Thornless) x Lawton, 4 of Cascade x Lucretia, and 2 of Boysen x Austin Thornless were free. It would seem that the western trailing blackberry carries resistance to the rust.

In the raspberry x blackberry crosses 66 seedlings of Early Harvest x (Lloyd George x Ranere), 9 of Colossus x Lucretia, 1 of Colossus x Eldorado selfed were free; but both seedlings of the selection of Eldorado selfed x Hailsham raspberry were highly susceptible. In the New York blackberry selections there was a range from entirely free (rating 10) to highly susceptible (ratings 2 and 3).

DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

NUT DISEASES IN THE PACIFIC NORTHWEST IN 1947

P. W. Miller

Walnut diseases

Walnut blight (Xanthomonas juglandis (Pierce) Dowson). Walnut blight was widely distributed in the Pacific Northwest in 1947. It was most prevalent and destructive in the northern part of the Willamette Valley in Oregon. It is estimated that approximately 20 percent of the potential walnut crop in non-sprayed orchards in the Pacific Northwest was either destroyed or the quality adversely affected by this disease.

Mushroom root rot (Armillaria mellea Fr.). This disease was the cause of the death of a limited number of Persian (English) walnut trees in Oregon and Washington in 1947.

Ring spot (Ascochyta juglandis Boltsh). This disease was found on the foliage in several Persian walnut orchards in western Oregon in 1947. However, it was not of any economic importance as only an occasional leaf on a tree was diseased. The lesions were not sufficiently abundant to cause any significant decrease in the functional leaf areas.

Root rot (cause undetermined). A root rot of undetermined cause was found affecting a number of Persian walnut trees grafted on California black or hybrid black walnut rootstocks in Oregon. Most of the affected trees are located in hill orchards on shallow, "heavy", or wet soils. Attempts to isolate a parasitic micro-organism from rotted tissues have thus far been unsuccessful.

Black-line (non-parasitic). This disorder caused the death of a considerable number of 14- to 25-year old grafted walnut trees in Oregon during 1947. The affected trees were Persian walnuts of the Franquette variety grafted on California black walnut rootstocks (Juglans hindsii Jeps.) or on hybrids of other species with this one.

Leaf scorch (non-parasitic). Leaf scorch was widely distributed in 1947, occurring to a greater or less extent in most Persian walnut orchards in the Pacific Northwest. In orchards on soils deficient in boron it was especially prevalent, causing a significant decrease in functional leaf area from death of the tissues and defoliation. The application of borax in sufficient amounts to the soil appreciably decreased the incidence and severity of this disorder.

Walnut shrivel (non-parasitic). This disorder, characterized by the presence of partially to completely shriveled kernels in the nuts, was widely distributed and present in greater than normal amount in the Pacific Northwest in 1947. In many orchards from 25 to 50 percent of the nuts contained shriveled or partially shriveled kernels thus necessitating cracking the crop.

Filbert diseases

Bacterial blight (Xanthomonas corylina (Miller et al.) Dowson). Bacterial blight of filbert was widely distributed in the Pacific Northwest in 1947, occurring to a greater or less extent in practically all orchards. It caused the most damage in young orchards, 2 to 3 years of age, where it resulted in the death of many trees.

Crown gall (Agrobacterium tumefaciens (E.F.S. and Town.) Conn). This disease was found on a number of young filbert trees in a nursery in the northern part of the Willamette Valley.

Powdery mildew (Phyllactinia corylea Karst.). This disease occurred to a greater or less extent in practically all filbert

orchards in the Pacific Northwest in 1947. However, it was of no economic importance as the disease did not make its appearance until very late in the season. The infected leaves retained their normal green color until the end of the season and persisted on the trees until time of normal leaf fall.

Brown stain (non-parasitic). Brown stain, characterized by the exudation of a brownish liquid from the shell and an abortion of the embryo, was present in greater than normal amounts in 1947 in orchards in the Pacific Northwest. Crop losses ranged from less than 1 up to 5 percent, the estimated average loss being around 2 percent.

Filbert shrivel (non-parasitic). This disorder, characterized by a shriveling of the kernels, was widely distributed in the Pacific Northwest in 1947, occurring to some extent in practically every orchard in Oregon and Washington.

DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES, CORVALLIS, OREGON

STRAWBERRY WITCHES'-BROOM VIRUS IN WISCONSIN

George M. Darrow

For many years reports have been received of a strawbery trouble in the Bayfield area of northern Wisconsin called "multiplier" from the habit of the affected plants in making multiple crowns with no, or a few very short, runners. Growers recognize the trouble, consider it contagious, and try to rogue it out.

On a trip into the region September 26 and 27, 1947, two places were visited. Only one clear case in several berry fields on one farm was found, but many affected plants in two fields on another farm were found. In the second farm the two fields were about 500 feet apart, the young planting being reported to have been set with plants from a nursery in the general vicinity. Either the planting stock was affected, or the disease was carried by a vector from the old planting, or from wild strawberry plants, or from other kinds of plants.

On bringing the specimens back to Beltsville, Demaree pointed out that the trouble resembles closely the "witches'-broom" virus disease described by Zeller in Oregon.[1]

DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

---

[1] Zeller, S. M. Preliminary studies on witches'-broom of strawberry. Phytopath. 17: 329-335. 1927.

MYCOSPHAERELLA ROSIGENA ON GREENHOUSE ROSES

D. E. Ellis and C. N. Clayton

Rose plants in commercial greenhouses in Raleigh, North Carolina, were severely affected by leaf spot and defoliation in September and October, 1947. This disease was of such proportions that leaf specimens were submitted by the grower to several parties for diagnosis. Black spot (Diplocarpon rosae), brown canker (Cryptosporella umbrina), and HETP (hexa-ethyl tetra-phosphate) injury were offered as possible causes of the defoliation. However, microscopic examinations of affected leaves and greenhouse observations showed that a fungus, believed to be Mycosphaerella rosigena, (Ell. & Ev.) Lindau, was consistently associated with the disease. Observations showed that black spot was present on less than 1 percent of the leaves and was causing practically no defoliation. Leaf spots caused by Cryptosporella umbrina were not found. The use of HETP Aerosol bombs applied to all rose houses alike on about August 1 and September 1 for insect control did not appear to be a contributing factor. No injury was observed following subsequent applications in October, although the disease continued to develop. Every leaf lesion observed with a necrotic center as large as 1/2 mm. in diameter exhibited the small perithecia of Mycosphaerella rosigena. These spots in great numbers were consistently associated with yellowing and abscission of affected leaflets and leaves.

The disease was severe in several houses on plants of Briarcliff and Better Times varieties. It was particularly prevalent on large plants in manured beds on which as high as 90 percent defoliation had occurred. In several other houses containing younger plants with less dense foliage the disease was present but it was not of sufficient intensity to cause any appreciable defoliation. While lesions occurred abundantly on leaves below excised flower stalks, none were found on leaves of shoots that grew from axillary buds just below the most recently cut flowers.

Tiny black perithecia of the fungus occurred abundantly on the dorsal and ventral surfaces of both living and dead leaves. They were found in large numbers on the irregular, purple-bordered, light-brown necrotic spots, 0.5-6.0 mm. in diameter, which constituted the most striking symptom. Although many of these fruiting bodies were immature, perithecia containing asci with mature ascospores were fairly prevalent. No imperfect stage of the fungus was found.

Isolates of the fungus obtained from germinating ascospores on potato-dextrose agar are indistinguishable from those obtained from young, not yet necrotic, purple leaf-spots (less than 2 mm. in diameter). In culture at 25° C. the slow-growing, olive-gray colonies

with irregular margins only attain a diameter of about 15 mm. in 3 weeks.

Morphologically, this fungus appears to be indistinguishable from M. rosigena described from Louisiana in 1887 by Ellis and Everhart[1] and illustrated by Schwarze[2] in New Jersey in 1917. Furthermore, the symptoms are in striking agreement with those given by Stewart[3] in 1910 in his account of a disease of greenhouse roses in Geneva, N. Y., which he attributed to M. rosigena. So far as we have been able to determine from the literature, the fungus has not previously been grown on culture media nor has its pathogenicity been established by inoculation. Further studies are underway.

PLANT PATHOLOGY SECTION, NORTH CAROLINA AGRICULTURAL EXPERIMENT STATION, RALEIGH

---

1 Ellis, J. B. and B. M. Everhart. New Species of Fungi. Jour. Myc. 3: 41-45. 1887.

2 Schwarze, Carl A. The parasitic fungi of New Jersey. N. J. Agr. Exp. Sta. Bull. 313. 1917.

3 Stewart, F. C. Notes on New York Plant Diseases, I. N. Y. (Geneva) Agr. Exp. Bull. 328: 305-404. 1910.

CURVULARIA SPOT, A NEW DISEASE OF GLADIOLUS

Robert O. Magie

Specimens of gladiolus spikes, Picardy variety, received from Fort Pierce, Florida, in August 1947, had many diseased spots that resembled those of the Botrytis disease. The spots were black with spores of Curvularia sp. In order to check on the possibility of the Botrytis disease occurring in mid-summer, the field was visited on August 20. Every floret and practically every leaf were found to be spotted with brown to black lesions. Except for a few Botrytis sporophores which were not typical of the gladiolus Botrytis, the only fungus found on the lesions was Curvularia sp.

In September similar specimens were received from Marianna in north Florida and from Foley, Alabama, where the disease was reported to have caused much damage during the summer. A Curvularia sp. was isolated from these spikes and from diseased corms from Cocoa, Florida. In the middle of October the disease was seen near Sanford and at Bradenton. Dr. A. A. Foster of the Central Florida Experiment Station at Sanford had isolated a similar fungus from the leaf spots. Early in November the disease was observed in all of the chief winter gladiolus production areas of Florida.

Picardy leaves were inoculated on October 23 at Bradenton with spore suspensions of the Alabama isolate. Leaf spots appeared in 4 to 5 days, sporulation commenced on the sixth day. A 13-hour wetting period sufficed for infection. Spotting of the stem appeared 3 days after inoculation of cut spikes, and on the petals only 2 days after inoculation with the spores. Reisolations yielded a Curvularia resembling in all respects the cultures made earlier. Mr. John A. Stevenson of the Division of Mycology and Disease Survey, Bureau of Plant Industry, Soils, and Agricultural Engineering, identified the fungus as similar to or identical with Curvularia lunata (Wakker) Boedijn.

Symptoms

The gladiolus leaves, stems and florets are attacked. On the leaves the spots are at first pin-head in size and round. The spots grow rapidly, largely in the direction of the veins. A week-old spot may be one-half inch long; a week later it may be 2 inches long. The color of the spot is tan, surrounded by a darker reddish brown ring, outside of which is a yellowish halo. Black spore masses can be seen on the central area of the spot. The brown or dead area is sunken. A pattern of concentric rings can often be seen in the browned area. Most of the leaf spots are located above the middle and below the tip region of Picardy leaves.

On the stem and bud sheath the spots are brown and oval, the edges sunken. They increase in size rapidly and spores are produced abundantly. The brown color changes to black with the appearance of spores. The infection penetrates through the bud sheath into the petals, often preventing the opening of the florets. The edges of the petals may be browned by this disease giving the appearance of Botrytis infection on the petals. Petal edges on Picardy florets may develop a lavender coloration due to Curvularia infection.

Importance

The greatest losses from Curvularia spot have been in the varieties Picardy, Corona, and Vredenburg. Most of the other important commercial varieties appear to be resistant. The leaves of Picardy from flowering-size corms or from cormels may be killed to the ground. In some cases where leaf spots were few, infections of Picardy spikes have been severe. Most of the Picardy spikes observed in a few packing houses visited in November were found to be diseased. On one such visit, spikes that were free of spots were packed as for shipping and opened 2 and 3 days later. Some of the florets by then were disfigured by Curvularia spots. In similar tests it was found that the moisture which condensed in the florets of packaged spikes was sufficient to bring about typical spotting of the petals which had been seeded with spores of the fungus.

Control

In fields where leaf spotting was severe, gladiolus growers appear to have controlled the disease by frequent spray applications of Dithane with zinc and lime. After 3 applications of Dithane within one week, diseased spikes in one field fell from about 95 to 5 percent in a 10 day period. It may be impractical to control the disease during the summer when temperatures range from 70 to 90° F. and rains are very frequent. However, the disease appeared to be controlled this fall in those fields sprayed every 5 days with the following mixture: Dithane D14, 2 quarts, zinc sulfate (25% Zn) 1 pound, and hydrated lime 1/2 pound in 100 gallons of water plus a wetting agent. Two pounds of a wettable DDT were added in most applications.

The results of a preliminary spray test indicated that Dithane and Puratized Agricultural Spray 2 1/2 pints per 100 gallons were equally effective in preventing infection of the leaves. Infection of the spikes was prevented by a 2-second dip in a solution of Puratized Agricultural Spray, 1 1/4 pints in 100 gallons plus 1 1/4 pints of Ultra wet 30E. These spikes were sprayed with a spore suspension of Curvularia and dried off 1 1/2 hours before dipping in the fungicidal solution. They were then wrapped and kept moist in the package for 2 days. Those that were inoculated 17 hours before treatment in the same solution became infected to a degree somewhat less than the in-

oculated controls. These controls became severely infected.

Discussion

It is believed that Curvularia spot was not a serious disease of gladiolus in Florida until early last summer. The spores of this fungus are so distinctive and so abundantly produced on any diseased specimen that the disease would probably have been identified earlier had it been prevalent in Florida.

The following references to the genus Curvularia have been found:

Boedijn, K. B. Ueber einige Phragmosporen Dematiazen. Bul. du Jardin Botanique de Buitenzorg. 13: 120-124. 1933.

Hynes, H. J. Studies on Helminthosporium root-rot of wheat and other cereals. Part I. Economic importance, symptoms and causal organisms. Part 2. Physiological specialization in Helminthosporium sp. Sci. Bul. Dept. Agr. New South Wales 47: 1-39. 1935.

_____. Species of Helminthosporium and Curvularia associated with root-rot of wheat and other graminaceous plants. Jour. and Proc. Roy. Soc. New South Wales 70: 378-391. 1937.

Groves, J. W. and A. J. Skolko. Notes on seed-borne fungi. III Curvularia. Can. Jour. Res., C. 23: 94-104. 1945.

VEGETABLE CROPS LABORATORY, FLORIDA AGRICULTURAL EXPERIMENT STATION, BRADENTON

CALENDULA RUST AND ITS CONTROL WITH FERMATE

E. M. Hildebrand and W. L. Vitopil

In a Floriculture cloth house at Texas A. and M. College a sudden outbreak of a rust disease occurred on the Pot Marigold (Calendula officinalis) on October 30, 1947. These plants were benched in a ground bed and spaced 10 inches each way. When examined on October 28 all the plants appeared healthy. Two days later spots were noticed on the older foliage of 25 of the plants. By November 1 the disease had spread so that 40 plants were diseased. On this date the entire bed of calendulas was sprayed with Fermate at the rate of 2 pounds per 100 gallons of water. PCC[1], a new product developed for use with insecticides and fungicides, was used as a spreader at the rate of 10 fluid ounces to 100 gallons of water. The bed of plants comprised 200 square feet of space and received 6 gallons of the above spray mixture.

[1] PCC is a product developed for use with insecticides and fungicides by Planetary Chemical Co., St. Louis, Missouri.

Experimental Results

Frequent observations were made on the results obtained following the application of the spray. It was concluded that the spray gave practically immediate and complete control as no new lesions were observed to develop subsequently. No further sprays have been applied. The temperatures recorded daily at 8 o'clock ranged from 70° to 55° F. between October 28 and November 11. During the following two weeks the early morning temperatures were usually below 55° F. but well above freezing.

Symptoms and Etiology

Numerous leaf lesions developed almost over-night and the plants seemed certain of destruction because affected leaves soon dried up. Sori developed in ring patterns many of which were concentric with the primary ones measuring about 1.5 mm. in diameter. Some of the initial lesions developing sori were as large as 7 mm. in diameter and the number of lesions per leaf ranged up to 80 or more on severely affected ones. The dark colored sori were found to contain an abundance of teliospores which appeared to fit the description for Micropuccinia emiliae as given in Dodge and Rickett (1943). According to that report this disease was first reported on calendula in the Midwest in 1922, where it has since been reported as serious on C. officinalis in greenhouses in Missouri.

Average length and width of the teliospores of the rust were 55 and 18 microns. From Arthur's (1934) descriptions these measurements are too large for Micropuccinia emiliae but would conform to Puccinia flaveriae.

Arthur (1934) describes this rust and states that the rust on Calendula officinalis L. and called Puccinia emiliae P. Henn. or Micropuccinia emiliae A. & J. of the tribe calendulae is related to or a variety of the rust Puccinia flaveriae which occurs in Illinois, Indiana, Iowa, Kansas, Missouri, Nebraska and Texas. He states further that Puccinia emiliae really occurs on Carduaceae (Tribe Senecioneae): Emilia sonchifolia (L.) D.C. in southern Florida, West Indies, and Central America.

Discussion and Conclusions

Due to the set-up it was not feasible to keep any unsprayed control plants and hence it is not possible to conclude that the practically perfect control obtained was entirely due to the specificity of the fungicide and not due to or ascribed in part at least to the drop in temperature and the almost continuous rain on November 13 and 14 and the intermittent rains and cloudy weather between November 19 and 23.

The high specificity of Fermate for the apple rusts commonly used in concentrations of from 1/2 to 1 1/2 pounds to 100 gallons of water prompted the testing of this material for the control of Calendula rust. Hence the writers will welcome advice and suggestions from others who may have recently encountered this rust and employed fungicides for its control.

Literature cited.

1. Dodge, B. O., and Rickett, H. W. Diseases and pests of ornamental plants. Jacques Cattell Press, Lancaster, Pa. 638 pp. 1943.
2. Arthur, J. C. Manual of the rusts in the United States and Canada. Purdue Research Foundation. Lafayette, Ind. 438 pp. 1934.

A. & M. COLLEGE OF TEXAS

CRACK-STEM OF CELERY IN SALINAS VALLEY

Roy Bardin

In the March 15, 1947 issue of the "Plant Disease Reporter" the author discussed the association of split-heart or doubles of celery with "crack-stem" as found in the Salinas Valley, California. Failure of the initial shoot apices was thought to be associated with a doubles or a split-heart condition, and since such failure in meristematic tissue is often associated with deficiency of boron, a more complete observation and study of the problem has been taken into consideration.

According to Reed[1], death of the shoot apex bud occurred when boron was eliminated from nutrient solutions in which celery plants were growing. He also noted cracked veins, as reported by Purvis and Ruprecht, 1937, as well as poor root development and drying of the central pith in the affected petioles of the boron deficient plants.

In October, 1947, a field of celery growing in an area in the Salinas Valley where the incidence of split-heart and adaxial as well as abaxial injury was extremely low in 1945 and 1946 was closely surveyed. Near time of harvest 80 percent of the crop was seriously damaged due to both abaxial and adaxial petiole cracking and transverse corking. All of the injured plants observed showed symptoms of adaxial transverse corking on most of the more mature petioles, but of this 80 percent

---

[1] Reed, H. S. A Physiological Study of Boron Deficiency in Plants, Hilgardia 17, 11, pages 377 - 411, May, 1947.

only half of the plants clearly exhibited abaxial "stem-crack" symptoms (Figure 1). Close examination failed to disclose shoot apex failure.

An inquiry into the cultural practices involved disclosed that tremendous amounts of nitrogenous fertilizers were applied to the crop prior to and during its growing period. It was further noted that the crop received about ten irrigations. Since the injury failed to appear until only a few weeks before harvest time, it is presumed that a micro-nutrient threshold action might be held responsible. A histological examination conducted by Prof. H. S. Reed of the University of California Division of Plant Nutrition revealed a condition the same as described in his recent paper on boron deficiency (see footnote 1).

Since a boron test plot established last spring on plants nearly half mature failed to produce conclusive data, a trial somewhat similar in nature was established this fall to follow the growth processes of celery plants well provided with boron salts as compared with plants produced on soil known to produce symptoms indicative of boron deficiency.

MONTEREY COUNTY DEPARTMENT OF AGRICULTURE, COURT HOUSE, SALINAS

TOBACCO DISEASES IN VIRGINIA--1947

S. B. Fenne

This has been a rather unusual year in the production of tobacco. In some counties, weather conditions were ideal, while in other areas it was exceedingly wet for a time followed by exceedingly dry weather until harvest. An early frost caught much tobacco still in the field in some areas.

Downy mildew, or blue mold, Peronospora tabacina, was first reported on April 25 in Halifax County, and a few days later was found in Mecklenburg and Pittsylvania Counties. The largest tobacco plants at this time were about the size of a silver dollar. In several spots in the plant bed smaller plants were killed outright. The weather remained cool and comparatively dry; however, sufficient moisture was present to make conditions favorable for blue mold. Growers in the flue-cured area were advised to start spraying or dusting with Fermate immediately. By May, tobacco blue mold was generally distributed throughout the State. However, because of dry, hot weather during most of the month little actual damage resulted. Because of the unusual weather conditions, the constant threat of a blue mold epiphytotic remained through the plant-growing season.

Figure 1. Petioles removed from several celery plants, showing abaxial and adaxial crack-stem. (See pp. 15-16)

Unfavorable weather conditions existed during the transplanting season. This resulted in a very uneven stand. Many fields had to be replanted several times. As a result of the extension program in blue mold control, it is estimated that about 65 percent of all tobacco growers in the Eastern Virginia belt used Fermate in their plant beds. Approximately 85,000 pounds of Fermate was sold in the Virginia tobacco area during 1947.

Blackshank, Phytophthora parasitica var. nicotianae, continued to spread throughout the bright tobacco area. It was found in three additional counties during 1947, namely Dinwiddie, Brunswick, and Amelia. Many additional farms in counties where the disease had been found in previous years were reported to be infested. At the present time, blackshank is known to be present in eleven Virginia Counties: Pittsylvania, Mecklenburg, Charlotte, Franklin, Lunenburg, Patrick, Nottaway, Cumberland, Dinwiddie, Brunswick, and Amelia. There are no doubt, many farms infested with blackshank that have not been reported.

During the past several years the Virginia Agricultural Experiment Station has been selecting strains of tobacco resistant to blackshank. During the past year, 18 blackshank resistant VESTA strains were released to farmers for trial. In most cases, farmers were very well pleased with results obtained from these strains. All of them were highly resistant to blackshank. In many cases, farmers reported that they would prefer to grow Vesta strains instead of old varieties of tobacco even though blackshank was not present on their farms.

Granville Wilt, Bacterium solanacearum, increased to a slight extent during the past season though it was not as severe as during 1945. Most of the farmers with soil infested with Granville wilt used Oxford 26 which is highly resistant to wilt. Farmers are generally well pleased with the results obtained from its use.

Sore shin, Rhizoctonia sp., appeared to be somewhat more widespread than in previous years. It was found quite generally distributed throughout the tobacco area and in some cases caused considerable injury. A few fields were found where groups of 20 to 30 plants were affected.

Root knot, Heterodera marioni, was more prevalent this year than during the past several years. This may have been due in part to the fact that hot, dry weather occurred at about the transplanting season, thereby raising the temperature of the soil and making conditions more favorable for nematodes to develop.

Black root rot, Thielaviopsis basicola, was found generally distributed throughout the tobacco area. Severe injury resulted in those cases where tobacco was planted on soil recently limed or where root

rot resistant tobacco was not used. Yellow Special, a flue-cured type, and Kentucky-16, a burley type, continue to maintain a high degree of resistance to black root rot.

Nematode root rot caused by Pratylenchus sp. was found much more generally distributed this season than during the past several years. Many calls were received from tobacco growers reporting that their plants were wilting badly during the day and usually recovering at night. In some of these fields, the tobacco was severely injured, while in others the plants recovered following an adequate rainfall.

Mosaic [virus] was found generally distributed throughout the whole tobacco area. In cases of severe attack, there was evidence that the infection orginated in the tobacco used by operators while handling plants in the bed. Many cases were observed where severe sun scald occurred followed earlier attacks by mosaic.

Ringspot [virus] was especially widespread in the dark and sun-cured tobacco areas. This can probably be explained because of the general practice of farmers in that area who grow clover and lespedeza in the rotation and in strips adjacent to tobacco.

Brown spot, Alternaria sp., was rather common on matured tobacco late in the season. Usually, the injury resulting was not very severe; however, in those areas where prolonged rainy periods occurred late in the season, considerable losses resulted.

Frenching [non-parasitic] was found frequently during the past season. In the average year, it is difficult to find a case of frenching. However, during this past season, considerable areas in some fields showed from a trace to severe injury. In many cases frenching occurred after topping in which case no appreciable loss resulted.

Hollow stalk, Bacillus carotovorus [Erwinia carotovora] was found occasionally. This is not usually considered a disease of much importance, but it caused considerable consternation on those farms where it was found.

Lightning injury caused a great deal of excitement in several parts of the State. Farmers were on the alert to detect the first indications of blackshank and Granville wilt on their farms and frequently mistook lightning injury for one of these diseases.

VIRGINIA AGRICULTURAL EXTENSION SERVICE
BLACKSBURG, VIRGINIA

SOME NOTEWORTHY DISEASE OCCURRENCES IN TEXAS

E. M. Hildebrand

Foliar Nematode on Chrysanthemum. Last July there was a sudden outbreak of a leaf spot or blight on chrysanthemums, propagation materials for which had been obtained from Ohio. When examined microscopically an abundance of nematodes was found in the lesions of the foliage. Based on symptoms, measurements of the nems and the progression from the lower to the higher leaves it was tentatively concluded that the causal agent was probably Aphelenchoides ritzemabosi Schwartz. Only one chrysanthemum variety seemed to be attacked in the floriculture greenhouse planting and control experiments were conducted, the details of which will be reported later.

Tomato Mosaic. A mosaic disease was observed in 1947 on tomato plants in several home gardens at College Station and commercial plantings in the Rio Grande Valley. The plants in all cases were stunted and considerably reduced in productivity. Detailed studies including thermal inactivation, dilution of the juice extract, longevity in vitro at room temperature and in refrigerator and when frozen left no doubt that the virus concerned was probably a strain of tobacco mosaic virus. In most of the trials the virus in the juice extract survived an exposure of 10 minutes at 80° C but not at 85° C. Studies on host range revealed that Bell Pepper plants were most severely affected with "green ring" symptoms developing in three days followed by death and dropping of the foliage and death to the plants in about two weeks.

Begonia Leaf Spot. A severe Begonia leaf spot or blight outbreak recently developed in a large commercial house at Houston. A bacterial organism was readily isolated from the spot lesions. While its identity has not been established it probably is Phytomonas (Xanthomonas) begoniae. This disease has been serious in past years on winter begonias grown in greenhouses in the United States, England and Portugal where overhead watering has been employed as happened to be true in this case.

AGRICULTURAL AND MECHANICAL COLLEGE OF TEXAS, COLLEGE STATION

A CHECK LIST OF THE DISEASES OF ECONOMIC PLANTS IN THE TINGO MARIA ZONE OF THE PERUVIAN MONTAÑA[1]

Bowen S. Crandall and Javier Dieguez C.[2]

The Estacion Central de Colonización en Tingo Maria is located on the Huallaga River on the Ocean to Amazon Highway. Altitudes in the zone range from 2,200 to 8,000 feet. Rainfall averages about 140 inches per year with about two-thirds of this total falling in the wet season. The zone was opened in 1937 to colonization, with the Experiment Station being organized in 1942 and pathological work being started in 1943.

ACACIA SP.
Diplodia sp.; root rot
Fusarium (Elegans) sp.; wilt

ARACHIS HYPOGAEA L. PEANUT
Sclerotium rolfsii Sacc.; root and collar rot
Cercospora personata (Berk. & Curt.) Ell. & Ev.; leaf spot

ARTOCARPUS ALTILIS L. BREADFRUIT
Diplodia sp.; leaf target spot
Pythium sp.; root rot

BETA VULGARIS L. SWISSCHARD
Cercospora sp.; leaf spot
Alternaria sp.; leaf spot
Rhizoctonia solani Kuehn; leaf spot, sand solash

BRASSICA CHINENSIS L. CHINESE CABBAGE
Rhizopus sp.; leaf spot

[1] A contribution from the Estacion Central de Colonizacion en Tingo Maria, Peru, a technical agricultural service organization for the Orient of Peru, operated jointly by the Direccion de Colonizacion y Asuntos Orientales, Ministry of Agriculture of Peru and by the Office of Foreign Agricultural Relations, U. S. Department of Agriculture. This study was made possible by funds provided through the Interdepartmental Committee on Scientific and Cultural Cooperation and funds from the Peruvian Government.

[2] Respectively, Pathologist, Office of Foreign Agricultural Relations, U. S. Department of Agriculture and Chief, Department of Plant Pathology and Entomology; and Assistant Chief, Department of Plant Pathology and Entomology, Estacion Central de Colonización en Tingo Maria.

BRASSICA OLERACEA var. BOTRYTIS L. BROCCOLI
Bacillus sp.; bacterial soft rot

BRASSICA OLERACEA L. CABBAGE
Bacillus sp.; bacterial soft rot

BRASSICA RAPA L. TURNIP
Rhizopus sp.; leaf spot
Rhizoctonia solani; leaf spot, sand splash

CANAVALIA ENSIFORMIS DC. JACK BEAN
Sclerotium rolfsii; root and collar rot

CAPSICUM FRUTESCENS L. var. GROSSUM. BELL PEPPER
Phytophthora cactorum (Leb. & Cohn) Schroet.; wilt and collar rot
Phytophthora capsici Leonian; wilt, fruit rot
Rhizoctonia solani; seedling damping-off

CAPSICUM FRUTESCENS L. var. LONGUM. AJI
Phytophthora capsici; stem rot and wilt
Fusarium sp.; wilt

CARICA PAPAYA L. PAPAYA
Rhizopus sp.; fruit rot

CEDRELA SP. CEDAR
Phyllachora balansae Speg.; twig die back
Pseudobeltrania cedrela P. Henn.; twig die back

CHRYSANTHEMUM CINERARIAEFOLIUM Vis. PYRETHRUM
Rhizoctonia solani; collar rot and sand splash

CICHORIUM ENDIVIA L. ENDIVE
Rhizoctonia solani; collar rot and leaf blight

CINCHONA MICRANTHA Ruiz & Pavon. CINCHONA
Phytophthora quininea Crandall; root and collar rot

CINCHONA OFFICINALIS L. CINCHONA
Corticium salmonicolor Berk. & Br.; pink disease
Pellicularia koleroga Cooke; thread blight
Phytophthora parasitica Dast.; top wilt and stem canker
Phytophthora quininea; root and collar rot

CINCHONA OFFICINALIS L., LEDGER TYPE. CINCHONA,LEDGER
Phytophthora parasitica; top wilt and stem canker
Phytophthora cinnamomi Rands; root rot
Phytophthora quininea; root and collar rot
Armillaria mellea; root and collar rot

CINCHONA cont.
Pellicularia koleroga; thread blight
Rhizoctonia solani; damping-off
Sclerotium rolfsii; collar rot

CINCHONA PUBESCENS Vahl, (C. SUCCIRUBRA Pavon). CINCHONA
Rhizoctonia solani; sore shin, late damping-off
Phytophthora parasitica; top wilt and stem canker
Phytophthora quininea; root and collar rot

CITRULLUS VULGARIS Schrad. WATERMELON
Ersiphe sp.; powdery mildew
Sclerotium rolfsii; fruit rot, stem canker
Pythium sp.; fruit rot

CITRUS AURANTIFOLIA Swingle. LIME
Phytophthora parasitica; seedling top wilt
Penicillium sp.; fruit rot
Diplodia sp.; fruit rot
Septobasidium (undesc.); felt disease

CITRUS AURANTIUM L. SOUR ORANGE
Phytophthora parasitica; seedling top wilt

CITRUS LIMONIA Osbeck. SWEET LEMON
Diplodia sp.; tip die back
Phytophthora parasitica; seedling top wilt
Septobasidium (undesc.); felt disease
Podonectria coccicola (Ell. & Ev.) Petch; on citrus scale
Tetracrium coccicola (Ell. & Ev.) Hoehn. = conidial stage of preceding

CITRUS MEDICA L. CITRON
Phytophthora parasitica; fruit rot, gummosis
Phytophthora citrophthora (Sm. & Sm) Leonian; fruit rot
Penicillium sp.; fruit rot

CITRUS SINENSIS L. SWEET ORANGE
Penicillium sp.; fruit rot
Septobasidium (undesc.); felt disease
Pellicularia koleroga; thread blight
Phytophthora parasitica; gummosis
Diplodia sp.; fruit rot

COFFEA ARABICA L. COFFEE
Armillaria mellea Vahl ex Fr.; root rot
Rosellinia bunodes (Berk. & Br.) Sacc.; root rot
Pellicularia koleroga; thread blight
Cercospora coffeicola Berk. & Curt.; leaf spot

CROTALARIA SP. CROTALARIA
Diplodia sp.; tip die back and wilt

CUCUMIS MELO L. CANTALOUPE
Ersiphe sp.; powdery mildew

CUCUMIS SATIVUS L. CUCUMBER
Ersiphe sp.; powdery mildew
Sclerotium rolfsii; collar rot
Pythium sp.; fruit rot

CUCURBITA MAXIMA Duch. SQUASH
Sclerotium rolfsii; fruit rot
Ersiphe sp.; powdery mildew

DAUCUS CAROTA L. CARROT
Alternaria dauci (Kuehn) Groves & Skolko; late blight
Hairy root; physiological

DERRIS ELLIPTICA Benth. (Abb.)
Diplodia sp.; leaf spot

ERYTHROXYLON COCA Lam. COCA
Uredo erythroxylonis Graz.; rust
Armillaria mellea; collar rot

GLYCINE SOJA Sieb. & Zucc. SOYBEAN
Sclerotium rolfsii; collar rot

GYNERIUM SACCHAROIDES Humbl. & Bonpl. CAÑA BRAVA, URVAGRASS
Rhopographus gynerii P. Henn.; leaf spot

HIBISCUS CANNABINUS L. KENAF
Pellicularia filamentosa Rogers; leaf target spot

HIBISCUS SABDARIFFA L. ROSELLE
Pellicularia filamentosa; leaf target spot

HEVEA BRASILIENSIS (H.B.K.) Muell. Arg. RUBBER, PARA
Pellicularia filamentosa; leaf target spot
Catacauma huberi (P. Henn.) Th. & Syd.; Black crust of leaf
Dothidella ulei P. Henn.; South American leaf disease
Cladosporium sp.; leaf spot
Periconia sp.; leaf spot
Pestalotia sp.; leaf spot
Colletotricum gloeosporioides (Penz.) Sacc.; leaf spot
Dimerosporium heveae Charles; parasite on Catacauma huberi

HEVEA GUIANENSIS Aubl. var. LUTEA (Spruce ex Benth.) Ducks & Schultes WEAK RUBBER
Pellicularia filamentosa; leaf target spot
Dothidella ulei; South American leaf disease

IPOMOEA BATATAS L. SWEET POTATO
Rhizopus nigricans Ehr. ex Fr.; soft tuber rot

IPOMOEA PURPUREA Roth. MORNING GLORY
Diplodia sp.; target spot of leaf

INDIGOFERA ENDECAPHYLLA Jacq.
Fusarium (Elegans) sp.; wilt
Pythium sp.; leaf blight

INGA SP. SHIMBILLO
Verticillium sp.; wilt
Ravenelia ingae (P.Henn.) Arth.; rust
Pellicularia filamentosa; leaf target spot

LACTUCA SATIVA L. LETTUCE
Rhizoctonia solani; leaf spot, sand splash

LESPEDEZA CUNEATA Benth.
Pythium sp.; leaf blight

LONCHOCARPUS SILVESTRIA A. C. Smith (L. NICOU (Aubl.) D.C.) SACHA BARBASCO
Dicheirinia archeri Cummins; leaf rust

LONCHOCARPUS URUCU Killip. BARBASCO from Brazil
Dicheirinia archeri; leaf rust

LONCHOCARPUS UTILIS A. C. Smith BARBASCO
Dicheirinia archeri; rust
Cephalosporium sp.; leaf wilt
Pellicularia filamentosa; leaf target spot
Cercospora lonchocarpi Stevenson; leaf spot

LYCOPERSICON ESCULENTUM Mill. TOMATO
Phytophthora cactorum; collar rot
Alternaria sp.; leaf blight
Cladosporium fulvum Cke.; leaf mold
Sclerotium rolfsii; collar rot
Rhizoctonia solani; damping-off and collar rot
Virus causing yellow dwarfing like beet curly top virus

LYCOPERSICON SP. TOMATILLO OR CHERRY TOMATO
Cladosporium fulvum; leaf mold

MANGIFERA INDICA L. MANGO
Diplodia sp.; tip die back
Colletotrichum gloeosporioides; anthracnose
Meliola mangiferae Earle; leaf spot

MANIHOT UTILISSIMA Pohl. YUCA
Cercospora henningsii Allesch; leaf spot

MUSA PARADISIACA L. BANANA
Diplodia theobromae (Pat.) Nowell; black head
Thielaviopsis paradoxa (DeSeyn.) Hoehn.; black head
Cercospora musae Zimm.; leaf spot
Cordana musae (Zimm.); leaf spot

NICOTIANA TABACUM L. TOBACCO
Mosaic

OCHROMA LAGOPUS Swartz. BALSA WOOD
Bacterial water soak of inner wood

ORYZA SATIVA L. RICE
Helminthosporium oryzae Van Breda de Haan; brown spot

PERSEA AMERICANA Mill. AVOCADO
Phytophthora cinnamomi; root and collar rot, "decline"
Physalospora perseae Doidge; anthracnose
Diplodia theobromae; fruit rot
Cercospora sp.; leaf spot

PHASEOLUS LUNATUS L. LIMA BEAN
Diplodia sp.; leaf blight and stem cankers
Pellicularia filamentosa (Corticium microsclerotia Weber); web blight

PHASEOLUS VULGARIS L. BEAN
Rhizoctonia solani; collar rot and stem canker
Sclerotium rolfsii; root and collar rot
Diplodia sp.; leaf blight
Uromyces phaseoli (Pers.) Wint.; rust
Pellicularia filamentosa; web blight

PISUM SATIVUM L. PEAS
Rhizoctonia solani; damping-off

SESAMUM INDICUM L. SESAME
Phytophthora cactorum; stem canker
Alternaria sp.; leaf spot

SOLANUM MELONGENA L. EGGPLANT
Rhizoctonia solani; sore shin and damping-off
Phytophthora cactorum; fruit rot and stem canker
Fusarium (Elegans) sp.; wilt

SORGHUM VULGARE Pers. var. SACCHARATUM. SORGHUM
Helminthosporium turcicum Pass.; leaf spot

SPINACIA OLERACEA L. SPINACH
Rhizoctonia solani; damping-off and sand splash

TEPHROSIA VOGELI Hook
Pellicularia koleroga; thread blight
Sclerotium rolfsii; root and collar rot

THEA SINENSIS L. TEA
Armillaria mellea; root rot
Colletotrichum camelliae Massee; leaf spot
Elsinoë leucospila Bitancourt & Jenkins; scab

THEOBROMA CACAO L. CACAO
Phytophthora palmivora Butler; pod rot
Marasmius perniciosus Stahel; witches' broom
Diplodia theobromae; pod rot

TRIFOLIUM SPP. CLOVERS
Rhizoctonia solani; sand splash and stem blight
Diplodia sp.; root and collar rot

TRIPSACUM LAXUM Nash.; Guatemala grass
Puccinia polysora Underw.; rust

VIGNA SINENSIS Endl. BLACK EYE PEAS, COW PEAS
Pellicularia filamentosa; web blight
Sclerotium rolfsii; collar rot

ZEA MAYS L. CORN
Ustilago maydis Cda.; smut
Puccinia polysora; rust

The undetermined Diplodia spp. mentioned under various hosts are probably, for the most part, D. theobromae (Pat.) Nowell (D. natalensis P. Evans). The various isolates compare rather closely with isolates of this species.

The isolates identified as Rhizoctonia solani are those types commonly referred to as Corticium vagum or Corticium solani, but now as Pellicularia filamentosa.

Algal leaf spot, Cephaleuros virescens Kuntze, has not been mentioned. It is however of common occurrence on the leaves of all the woody trees and shrubs of the zone.

The help of the Division of Mycology and Disease Survey, Bureau of Plant Industry, Soils, and Agricultural Engineering is gratefully acknowledged for making or checking a large part of the identification of the pathogenic fungi.

ESTACION CENTRAL DE COLONIZACION EN TINGO MARIA
TINGO MARIA, HUANUCO, PERU, S. A.

CHECK LIST REVISION

Freeman Weiss

IMPATIENS (BALSAMINACEAE)

IMPATIENS BALSAMINA L., GARDEN BALSAM (1); annual of southeastern Asia. I. SULTANI Hook. f. (or I. HOLSTII Engler & Warb.) (2); perennial of east Africa. Both are cultivated for ornament.

Bacterium ? solanacearum E.F.Sm., bacterial wilt. Wis.
Cercospora fukushiana Matsuura & Yamamoto, leaf spot. Kans. ? Fla.
Heterodera marioni (Cornu) Goodey, root knot.
Phyllosticta sp., leaf spot. N.J. (2)
Pythium sp., damping off. Wash. (2)
Rhizoctonia solani Kuehn, damping off. Fla.
Sclerotium rolfsii Sacc., stem rot. Ill. (2)
Septoria noli-tangeris Gerard, leaf spot.
Verticillium albo-atrum Reinke & Berth., wilt. N.Y.

IMPATIENS BIFLORA Walt. (1) and I. PALLIDA Nutt. (2), JEWELL-WEED, TOUCH-ME-NOT. Annuals of moist waste ground, throughout the Eastern and Central States and southward, (2) more frequent northward; wildlife food plants.

Cuscuta spp., dodder. Widespread (1,2). C. gronovii Willd. reported in N.Y.
Discosia maculicola Gerard, leaf spot. N.Y. (1)
Gloeosporium impatientis H.W.Anderson, leaf spot. Ill., Ind. (1)
Mycosphaerella impatientis (Pk. & G.W.Clint.) House, on leaves. N.Y., Vt., Wis. (1); Va. (2)
Plasmopara obducens Schroet., downy mildew. Mass. to Md., Ind., and Minn. (1); N.Y. to Ala., Mo. and Wis. (2)
Phomopsis impatientis Dearn. & House, on stems. N.Y. (1)
Puccinia argentata (Schultz) Wint. (II,III), rust. Mass. to Ga., Miss., Iowa and Minn. (1); Ill., Ind., Iowa, N.Y., Tenn. (2) O and I on Adoxa moschatellina L.
P. rubigo-vera (DC.) Wint. var. impatientis (Arth.) Mains (O,I), rust. General (1,2). II and III on grasses, mostly Agrostis and Elymus spp. Several special forms as graminicola, similis, and singularis have been designated within this var. by Mains.
Ramularia impatientis Pk., leaf spot. Vt. to Md., Nebr. and Minn. (1,2)
Septoria noli-tangeris Gerard, leaf spot. Mass. to Ohio, Ill., and Wis. (1); Iowa, W.Va. Associated with Mycosphaerella impatientis, perhaps its conidial stage.

IMPATIENS cont.
Pythium paroecandrum Drechs., rootlet rot. Md. (2)

BASELLA (BASELLACEAE)

BASELLA RUBRA L., MALABAR-NIGHTSHADE. Annual or biennial vine of tropical Asia, grown in warm regions for edible leaves.

Acrothecium basellae Alvarez Garcia, leaf and stem spot. P.R.
Heterodera marioni (Cornu) Goodey, root knot. ? Fla.
Rhizoctonia sp., secondary stem rot. P.R.

BEGONIA (BEGONIACEAE)

BEGONIA spp. A large assemblage of succulent herbs of tropical origin, long in cultivation in greenhouses and window gardens and also as bedding plants, much modified by hybridization and selection. The commonly recognized horticultural divisions as fibrous-rooted, rhizomatous, and tuberous-rooted are here typified as B. SEMPERFLORENS Link & Otto (1), B. REX-CULTORUM Bailey (2), and B. TUBERHYBRIDA Voss (3), these representing groups of related forms rather than specific types; not classified (4).

Agrobacterium tumefaciens (E.F.Sm. & Town.) Conn, crowngall. Widely used in experimental inoculations, natural infection reported in Conn., Miss., Tex. (4)
Aphelenchoides olesistus Ritz.-Bos, leaf nematode. Cosmopolitan in greenhouses, reported from Calif., Conn., ? Ill., Mass., Mich., N.J., N.Y., Pa., Wash. (1,2,4)
Armillaria mellea Vahl ex Fr., root rot. Calif. (3)
Bacterium flavozonatum McCul. See Xanthomonas begoniae
Botrytis cinerea Pers. ex Fr., gray-mold blight. Cosmopolitan, especially in propagation, (1,2,4)
Cercospora sp. leaf spot. Fla., Ga., Miss., N.J., Tex. (1); N.J. (2)
Erysiphe cichoracearum DC., powdery mildew. Calif. (3)
Gloeosporium sp. (sometimes reported as G. begoniae Magnaghi), leaf spot, anthracnose. Fla., La., Mass., Miss., Tex. (4); N.J. (2). Probably a conidial form of Glomerella cingulata (Ston.) Spauld. & Schrenk.
Heterodera marioni (Cornu) Goodey, root knot. Cosmopolitan, in greenhouses in the North, in the open in the South (1,2,4); Calif. (3)
Oidium sp., powdery mildew. Fla., N.Car. (4)
Omphalia flavida (Cke.) Maubl. & Rang., leaf spot. P.R. (4)
Penicillium bacillosporium Swift, leaf spot (secondary?), N.Y. (4)

BEGONIA cont.

Phyllosticta sp., leaf spot. N.J. (2,4), Pa. (4)

Pythium spp., root and stem rot, damping off, leaf rot. P. debaryanum Hesse identified in Mo., N.Y. (1,3); R.I. (4); P. intermedium DBy., in Calif., N.J., N.Y. (3); P. splendens Braun in Mo. (1); P. ultimum Trow in Calif., Mo., N.J., N.Y. (1,3).

Rhizoctonia solani Kuehn, root and stem rot, sometimes leaf rot. Cosmopolitan.

Sclerotinia sclerotiorum (Lib.) DBy., stem rot. Calif. (3)

Sclerotium rolfsii Sacc., stem rot. Ill. (4)

Sphaeropsis begoniicola Ell. & Ev., on leaves. Ala. (4)

Thielaviopsis basicola (Berk. & Br.) Ferr., root rot. Mass., Ohio (1)

Verticillium albo-atrum Reinke & Berth., wilt. Conn., N.Y. (4)

Xanthomonas begoniae (Buchw.) Dowson (? X. flavozonatum (McCul.) Dowson), bacterial spot. Calif., Colo., Md., Ga., Mass., N.J., N.Y., Ore., Tex., probably general (1,2,4); Calif., N.J., N.Y., Ore. (3)

Spotted wilt -- virus (Lethum australiense Holmes, Lycopersicon virus 3 K.M.Sm.). Calif., Mo. (3)

Oedema (watersoaked spotting of leaves) -- physiological. Frequent in house-plant culture, occasional in greenhouses.

ACHLYS (BERBERIDACEAE)*

ACHLYS TRIPHYLLA (Smith) DC., VANILLA-LEAF. Small perennial herb of north Pacific Coast; grown in rock gardens.

Ascochyta achlyicola Ell. & Ev., leaf spot. Wash. Perhaps a growth stage of the following.

Stagonospora achlydis (Dearn.) Sprague, leaf spot. Ore.

CAULOPHYLLUM (BERBERIDACEAE)

CAULOPHYLLUM THALICTROIDES (L.) Michx., BLUE COHOSH. Perennial herb of woodlands in the Eastern and North Central States, grown in wild gardens.

Botrytis sp. (? B. streptothrix (Cke. & Ell.) Sacc., leaf blight. N.J., N.Y. Conidial stage of Streptotinia sp.

Calloria caulophylli (Ell. & Ev.) Rehm, on stems. N.Y.

Cercospora caulophylli Pk., leaf spot. Vt. to Va., Mo. and Wis.

* For Berberis, Mahonia, and Nandina of this family see PDR 24: 318-319, 25: 366, and 25: 423, respectively.

CAULOPHYLLUM cont.

Vermicularia hysteriiformis Pk., on stems. N.Y., Wis.

PODOPHYLLUM (BERBERIDACEAE)

PODOPHYLLUM PELTATUM L., MAY-APPLE. Perennial herb of woodlands in the Eastern and Central States and southward; often grown in wild gardens, source of drug podophyllum.

Botrytis cinerea Pers. ex Fr., gray-mold blight. N.J.
Cercospora podophylli Tehon & Daniels, leaf spot. Ill.
(Gloeosporium podophyllinum): Septotinia podophyllina
Glomerella cingulata (Ston.) Spauld. & Schrenk, leaf spot. Del.
Pezizella oenotherae (Cke. & Ell.) Sacc., leaf spot. Va.
Phyllosticta podophylli (Curt.) Lint., leaf spot. N.Y. to Ala., Ark., and Wis.
P. podophyllina Tehon & Stout. Ill.
Puccinia podophylli Schw. (0,I,III), rust. General
Rhizoctonia sp., stem rot. Mo.
Septogloeum podophyllinum (Ell. & Ev.) Sacc. Conidial stage of Septotinia podophyllina
Septoria podophyllina Pk., leaf spot. N.Y. to Miss., Mo. and Wis.
Septotinia podophyllina Whet., leaf blight. Del., Md., Mo., N.J., N.Y., Va., W.Va.

VANCOUVERIA (BERBERIDACEAE)

VANCOUVERIA spp. Woodland perennial herbs of the north Pacific Coast; grown in wild gardens.

Phragmodothis berberidis (Alm. & Camara) Theiss. & Syd., leaf spot. Calif. On V. parviflora Greene
Ramularia vancouveriae (Ell. & Ev.) Sprague, leaf spot. Calif., Ore. On V. hexandra (Hook.) Morr. & Dcne.

ANCHUSA (BORAGINACEAE)

ANCHUSA OFFICINALIS L., ALKANET, BUGLOSS (1); other spp. (2). Biennial or perennial herbs of s. Europe and Africa, grown for ornament.

Puccinia rubigo-vera (DC.) Wint. var. secalis (Eriks.) Carleton (0,I), rust. Ind. (1,2), Mich. (1). II and III on Secale cereale L.
Rhizoctonia solani Kuehn, damping off. Conn. (2)

ANCHUSA cont.

Mosaic -- unidentified virus. Ind. (1). Susceptibility to aster yellows virus (Chlorogenus callistephi Holmes) and to beet curly-top virus (C. eutetticola Holmes) by experimental inoculation has been demonstrated in A. capensis Thunb. and A. azurea Mill.

BORAGO (BORAGINACEAE)

BORAGO OFFICINALIS L., BORAGE. Annual of Mediterranean region, grown for ornament and as a honey plant.

Ramularia sp., leaf spot. Calif.

CRYPTANTHA (BORAGINACEAE)

CRYPTANTHA spp. Numerous annual or perennial herbs, chiefly in dry, open ground in the Southwestern States; some are of minor forage value or furnish food for wildlife.

Erysiphe cichoracearum DC., powdery mildew. Calif., Nev.
Puccinia aristidae Tracy (0,I), rust. Ariz. II and III on native grasses, especially Aristida and Distichlis
P. cryptanthes Diet. & Holw. (II,III), rust. Calif., Wash. 0,I unknown.
Synchytrium myosotidis Kuehn, on leaves. Ariz., Calif.

CYNOGLOSSUM (BORAGINACEAE)

CYNOGLOSSUM spp., HOUNDS-TONGUE. C. amabile Stapf & Drum (1), C. zeylanicum (Vahl) Thunb. (2), and C. officinale L. (3) are biennials of e. Asia; (1) and (2) are grown in gardens, (3) is naturalized in waste ground in the Eastern and Central States, becoming a weed; C. virginianum L. (4) is a native perennial herb in the Eastern and South Central States; all are minor honey plants.

Cercospora cynoglossi Van Hook, leaf spot. Ind. (3)
Erysiphe cichoracearum DC., powdery mildew. Utah, Wyo. (3). See note on this name under Myosotis.
Heterodera marioni (Cornu) Goodey, root knot.
Peronospora cynoglossi Burr., downy mildew. Md., Ill. (3)
Phoma cynoglossi Dearn., on stems. N.Y. (3)
Phyllosticta decidua Ell. & Kell., leaf spot. Wis. (3)
Ramularia lappulae J.J.Davis, leaf spot. Wis. (3)
Sclerotinia sclerotiorum (Lib.) DBy., stem rot. Wash. (1)
Sclerotium rolfsii Sacc., southern blight. Fla. (1,2)

ECHIUM (BORAGINACEAE)

ECHIUM VULGARE L., BLUE-WEED, VIPERS-BUGLOSS. Biennial herb of Europe, extensively naturalized in the Eastern and Central States; sometimes a weed but a minor honey plant.

Cercospora echii Wint., leaf spot.
Rosellinia sp. (?R. necatrix (Hartig) Berl.), root rot. Calif.

HELIOTROPIUM (BORAGINACEAE)

HELIOTROPIUM ARBORESCENS (H. peruvianum L.), COMMON HELIOTROPE (1). Perennial herb or subshrub of Peru, grown for ornament under glass and as outdoor bedding plant. H. CURASSAVICUM L., WILD or SEASIDE H. (2), in several variant forms, occurring on the Atlantic and Gulf Coasts, on the Western Plains, and in tropical America, is a wildlife food plant.

Botrytis cinerea Pers. ex Fr., leaf spot, shoot blight. Cosmopolitan under cool moist conditions. (1)
Cercospora heliotropii Ell. & Ev., leaf spot. N.Mex., Ore. (2)
Heterodera marioni (Cornu) Goodey, root knot. Mass., Wash. (1)
Puccinia aristidae Tracy (0,I), rust. Ariz., Calif., Nev., N. Mex., Tex., Utah (2). II and III on native grasses.
Sclerotium rolfsii Sacc., southern blight. P.R. (1)
Verticillium albo-atrum Reinke & Berth., wilt. Md. (1)

LAPPULA (BORAGINACEAE)

LAPPULA spp. (annuals), STICKSEED. L. ECHINATA Gilib. (1), of Europe, is widely distributed as a weed in the Eastern and Central States, L. REDOWSKII (Hornem.) Greene (2), and related forms occurring throughout the Western Plains, are wildlife food plants.

Erysiphe cichoracearum DC., powdery mildew. Calif., Mont., Tex. Wyo. (2). See note on this sp. under Myosotis.
Peronospora echinospermi Swingle, downy mildew. N.Dak. (1); Kans., Mont., Nebr. (2)
Puccinia aristidae Tracy (0,I), rust. Ariz., Colo., Utah (2). II and III on native grasses.

LAPPULA spp. (biennial, often referred to Hackelia). L. FLORIBUNDA (Lehm.) Greene (1), of wide distribution on the Western Plains, is sometimes grown in gardens. L. VIRGINIANA (L.) Greene (2), of dry woodlands and old fields in the Eastern and Central

LAPPULA cont.
States, is sometimes a troublesome weed.

Cercospora cynoglossi Van Hook, leaf spot. Wis. (2)
Entyloma serotinum Schroet., leaf smut. Utah (1)
Erysiphe cichoracearum DC., powdery mildew. Mich., Minn., Mo., Ohio, Wis. (2). Perhaps E. horridula (Wallr.) Lév., though commonly reported as this.
Microsphaera sp., powdery mildew. Ill. (2)
Ovularia asperifolii Sacc., var. lappulae J.J.Davis, leaf spot. Wis. (2)
Peronospora echinospermi Swing., downy mildew. Iowa (2)
P. myosotidis DBy. Mont. (1)
Phyllosticta decidua Ell. & Kell., leaf spot. Wis. (2)
Puccinia mertensiae Pk. (III), rust. Utah (1)

LITHOSPERMUM (BORAGINACEAE)

LITHOSPERMUM spp., PUCCOON GROMWELL. Numerous annual or perennial herbs, introduced or native, of prairies, open woods and waste ground, mostly in the Central and Western States; some have showy flowers and are grown in rock gardens, several furnish food for wildlife. L. ANGUSTIFOLIUM Michx. (1), L. CANESCENS (Michx.) Lehm. (2), L. RUDERALE Dougl. (3) and L. TUBEROSUM Rugel (4) are native perennials; L. ARVENSE L. (5), naturalized from Europe, is sometimes a weed.

Aecidium hesleri Arth. (0,I), rust. Tenn. (4)
Cercosporella herpotrichoides Fron, on roots. Ida., Ore., Wash. (3)
Erysiphe cichoracearum DC., powdery mildew. Pa. (5)
Puccinia rubigo-vera (DC.) Wint. var. apocrypta (Ell. & Tracy) Arth. (0,I), rust. Nebr., N.&S.Dak. (1), N.Dak. (2)

MERTENSIA (BORAGINACEAE)

MERTENSIA spp., BLUEBELLS. Perennial herbs of meadows and woodlands, mostly in the Western States except (1); all with attractive flowers, several, especially (4) and (6) are grown in gardens. M. CILIATA (Torr.) G.Don (1), M. LAEVIGATA Piper (2), M. LANCEOLATA (Pursh) DC. (3), and M. PANICULATA (Ait.) G.Don (4) are in the Pacific Northwest and Rocky Mountains; M. SIBIRICA G.Don (5) is introduced, and M. VIRGINICA (L.) DC., VIRGINIA COWSLIP (6) occurs in the Eastern and Central States.

Entyloma serotinum Schroet., leaf smut. Wyo. (1); Ind., Iowa, Md., Va. (6)

MERTENSIA cont.

Erysiphe cichoracearum DC., powdery mildew. Colo., Mont., Utah, Wyo. (1), Ala., Colo., Mont., Utah, Wyo. (5)
Peronospora sp., downy mildew. Mont.
Puccinia mertensiae Pk. (III), rust. Colo., Utah, Wyo. (1), Colo. (5)
P. rubigo-vera (DC.) Wint. var. apocrypta (Ell. & Tracy) Arth. (O,I), rust. Ida. (1,2,4), Ore. (2), Mont. (4), Ore. (5)
Sclerotinia sclerotiorum (Lib.) DBy., stem rot. Colo. (3)
Septoria poseyi Sprague, leaf spot. Ore. (2)

Mosaic -- unidentified virus. N.J. (6)

MYOSOTIS (BORAGINACEAE)

MYOSOTIS SCORPIOIDES L. (1) and M. SYLVATICA Hoffm. (2), FORGET-ME-NOT. Annual or biennial herbs of Europe, long cultivated and widely escaped, the former naturalized in the East, South and Calif., the latter more common in gardens. M. LAXA Lehm. (3) and M. VIRGINICA (L.) B.S.P. (4) are small native herbs of the Eastern and North Central States, the former a wildlife food plant.

Botrytis cinerea Pers. ex Fr., gray-mold blight. Cosmopolitan (1,2)
Peronospora myosotidis DBy., downy mildew. Wis. (3,4); Ill., Mich., Miss. (4)
Puccinia estoniae Arth. var. myosotidis Mains (O,1), rust. Ill., Ind., ?Miss., Mo., N.Car., Wis. (4). II and III on Sphenophdis spp.
Sclerotinia sclerotiorum (Lib.) DBy., crown rot. Ill., Wash. (1,2)

Chlorosis -- suspected virus. Ga. (1). Susceptibility of (1) to experimental inoculation with aster yellows virus (Chlorogenus callistephi Holmes) and beet curly top virus (C. eutetticola Holmes) has been shown.

ONOSMODIUM (BORAGINACEAE)

ONOSMODIUM MOLLE Michx. var. OCCIDENTALE (Mack.) Johnston, MARBLE-SEED. Perennial herb of prairies and plains in the North Central and Western States, sometimes grown in wild gardens and a wildlife food plant.

Puccinia rubigo-vera (DC.) Wint. var. apocrypta (Ell. & Tracy) Arth. (O,I), rust. Colo., Kans., Nebr., N.Dak. The form on this host has also been designated P. rubigo-vera sp.f. onosmodii. Mains.

BUXUS (BUXACEAE)**

BUXUS SEMPERVIRENS L., BOX, BOXWOOD (I). Evergreen shrub or small tree of Mediterranean Region, long cultivated for hedges, borders and specimen plants; hardy in Zone VI and part of V, cultivated from Cape Cod to Ga., Miss. and Ky. Two varieties are generally distinguished, var. ARBORESCENS L., TREE BOX, "AMERICAN" B. (1) and var. SUFFRUTICOSA L., DWARF BOX, "ENGLISH" B. (2); there are a number of minor horticultural forms, including variegated. B. MICROPHYLLA Sieb. & Zucc. var. JAPONICA (Muell. Arg.) Rehd. & Wils., JAPANESE BOX (3), and var. KOREANA Nakai, KOREAN B., also are cult., the former more commonly in the South.

Armillaria mellea Vahl ex Fr., root rot. N.J.
Colletotrichum sp., leaf cast (? secondary). Md. (1,2)
Fomes igniarius L.ex Kichx, trunk rot. Va. (1)
Fusarium buxicola Sacc. (= Nectria desmazierii Becc. & DeNot.), on branches, ? canker. Ala., Md. (1,2)
F. lateritium Nees ex Fr., on twigs and leaves, ? dieback or secondary. Md., S.Car., Va. (1,2) Fusarium sp. commonly found on moribund or dead leaves of Buxus is probably usually this or the preceding.
F. oxysporum Schlecht. emend Snyder & Hansen, root rot (? secondary). Md. (1)
F. roseum Lk. emend Snyder & Hansen, on twigs and leaves. Md. (1)
F. solani (Mart.) App. & Wr., root rot (? secondary). Md. (1)
Ganoderma lucidum (Leyss. ex Fr.) Karst., trunk rot. Va. (1)
Hyponectria buxi (DC. ex Fr.) Sacc., blight, leaf cast. Reported under this name only in N.Y. (2), but this probably includes the fungus reported as Laestadia buxi (Fckl.) Sacc. in Md., Mass., Miss., N.Y., and probably general in the host range, especially on (2). Verticillium buxi is commonly associated.
Macrophoma candollei (Berk. & Br.) Berl. & Voglino, on moribund leaves. General, especially on (2), following freezing, sun scald, and other injuries. Some reports of Phoma, Diplodia, and Sphaeropsis belong here; also referred to Ludwigiella candollei (Berk. & Br.) Petr.
Nectria spp. N. cinnabarina Tode ex Fr. is reported on twigs in Ala. For N. desmazierii see Fusarium buxicola. See also Hyponectria and Pseudonectria.
(Nectriella rousseliana (Mont.) Sacc.): Pseudonectria r.
Penicillium roseum Lk., on moribund leaves. S.Car. On this host probably refers to Volutella buxi and/or Verticillium buxi.
Phoma conidiogena Schnegg, leaf-tip blight. Md., N.J., N.Y. (1, 2); Okla. (1).

** Revision of former list PDR 24: 392-393. 1940

BUXUS cont.

Phomopsis stictica (Berk. & Br.) Trav. (= Diaporthe eres Nits.), on twigs and branches. Md. (1,2)

Phyllosticta auerswaldii Allesch., leaf spot. Md., Mass., N.J., N.Y., Pa., Va., Wash. (1)

Phymatotrichum omnivorum (Shear) Dug., root rot. Tex. (1)

Phytophthora parasitica Dast., root rot. Md. (1,2)

Poria punctata Fr., heartwood rot. Va. (2)

Pratylenchus pratensis (DeMan) Filip., meadow nematode associated with root necrosis, a probable factor in leaf-bronzing and dieback. N.Y. to Ala. and Tex., especially on (2)

Pseudonectria rousseliana (Mont.) Seaver, on leaves. N.Y. Reputed ascigerous stage of Volutella buxi, general on moribund leaves, twigs and branches.

Pythium sp. root rot. Mass. (2)

Rhizoctonia solani Kuehn, secondary root rot. Cosmopolitan following injury by meadow nematodes and other causes.

Rotylenchus sp., on roots. Mass. (2)

Verticillium buxi (Lk.) Auers. & Fleisch., on moribund leaves, twigs and roots. Cosmopolitan. Often associated with Hyponectria buxi but connection not confirmed.

Volutella buxi (DC. ex Fr.) Berk. & Br., on leaves, twigs and branches, associated with canker and dieback. General (1,2). Reputed conidial stage of Pseudonectria rousseliana but connection not confirmed. Also referred to Chaetodochium buxi (DC.) Hoehn.

Variegation, ? mosaic -- cause unknown, distinct from marginal variegation in horticultural forms of box. Md., N.Y., Va. (1,2).

CARNEGIEA (CACTACEAE)

CARNEGIEA (Cereus) GIGANTEA (Engelm.) Britton & Rose, SAHUARO. Columnar or dendriform cactus of great size occurring in Ariz. and s.e. Calif.; a distinctive feature of the desert landscape, sometimes planted for novelty.

Agrobacterium tumefaciens (E.F.Sm. & Town.) Conn, crown gall. Ariz.

Erwinia carnegieana Standring, bacterial blight. Ariz.

Hendersonia cerei Pk. on cortex. Ariz.

Poria carnegieae Baxter, dry rot. Ariz.

CEREUS (CACTACEAE)

CEREUS spp. A diverse assemblage of small to large, columnar or cylindrical cacti, now distributed in various genera which together constitute the largest tribe of the family; also a genus of this tribe but here used in the broader sense. Many are endemic in the deserts of the Southwestern States; some are cultivated for the showy, often nocturnal flowers.

Aspergillus alliaceus Thom & Church, stem and branch rot. Tex. (spp.)
Botrytis cinerea Pers. ex Fr., gray-mold rot. Occasional under damp conditions in indoor culture.
Colletotrichum cerei Earle (? C. gloeosporioides Penz.), on cladodes. Fla. (on Hylocereus ? undatus).
Erwinia carotovora (L.R.Jones) Holland, bacterial rot. Tex. (spp.)
Fusarium oxysporum Schlecht., root and stem rot. Ariz., Calif. (on Lophocereus schottii); Miss., Tex. (spp.)
Helminthosporium sp. (? H. cactivorum Petr.), stem rot. Tex. (on Echinocereus chloranthus).
Hendersonia opuntiae Ell. & Ev., scorch, scald (? secondary). Tex. (spp.)
Heterodera marioni (Cornu) Goodey, root knot. On Hylocereus undatus and sp.
Mycosphaerella opuntiae (Ell. & Ev.) Dearn. (Gloeosporium lunatum Ell. & Ev.), anthracnose. Tex. (spp.)
Phymatotrichum omnivorum (Shear) Dug., root rot. Tex. (spp.)
Poria sp. (? P. sinuosa Fr.), dry rot. Calif.
Septoria cacticola P.Henn., stem spot. Tex. (on Acanthocereus pentagonus.
Stevensea wrightii (Berk. & Curt.) Trott., black spot. Tex. (spp.)

ECHINOCACTUS (CACTACEAE)

ECHINOCACTUS spp., BARREL, STAR, and SEA-URCHIN CACTI. Small to large, mostly cylindrical cacti of the Southwestern deserts; some yield palatable juice which has been used in confectionery, many are grown for novelty.

Aspergillus alliaceus Thom & Church, stem rot. Tex.
Diplotheca sp. (? D. tunae (Spreng.) Starb.), black spot. Tex.
Hendersonia opuntiae Ell. & Ev. scald. Tex.
Mycosphaerella opuntiae (Ell. & Ev.) Dearn., anthracnose. Tex.
Naemospora pruinosa Berk. & Curt., on cortex. Mass.
Phymatotrichum omnivorum (Shear) Dug., root rot. Tex.

EPIPHYLLUM (CACTACEAE)

EPIPHYLLUM (PHYLLOCACTUS) spp., also SCHLUMBERGERA TRUNCATA, CHRISTMAS CACTUS, CRAB C. Segmented cacti with mostly flat or angular cladodes, chiefly of Central or South America, with many horticultural derivatives; grown for showy, often nocturnal flowers.

Colletotrichum phyllocacti Ell. & Ev., on cortex. Ala.

MAMMILLARIA (CACTACEAE)

MAMMILLARIA spp., PINCUSHION CACTUS, FISHHOOK C. Mostly small compact cacti, endemic in the Southwestern deserts; collected or grown for novelty.

Gloeosporium cactorum Ston., zonate spot.
Heterodera marioni (Cornu) Goodey, root knot. Tex.
Mycosphaerella opuntiae (Ell. & Ev.) Dearn., anthracnose. Tex.
Phoma mamillariae Ell. & Ev., on spines. Mont.
Phymatotrichum omnivorum (Shear) Dug., root rot. Tex.

OPUNTIA (CACTACEAE)

OPUNTIA spp., PRICKLY-PEAR, TUNA. Numerous, mostly low cacti with segmented flat cladodes ("pads"), some round-stemmed and dendriform, occurring commonly on the arid plains of the Southwest, also near the Coast in the Gulf and Eastern States, a few in the Central and Plains States; many introduced into cultivation from Central and South America. Some are grown for novelty and showy flowers; the relatively spineless types furnish natural forage or are cultivated; several are troublesome weeds on range lands. The principal spp. represented here are O. ammophila (1), O. compressa (2), O. dillenii (Ker-Gawl.) Haw., (3), O. engelmannii Salm-Dyck ex Engelm. (4), O. ficus-indica Mill. (5), O. lindheimeri Engelm. (6), O. polyacantha Haw. (7).

Anthostomella cacti (Schw.) Sacc., on cortex. Calif. (4), N.J.
Aspergillus alliaceus Thom & Church, cladode rot. Tex.
Colletotrichum (? C. dematium (Fr.) Grove), on cladodes. N.Y., Tex., P.R. See also Gloeosporium.
Diplodia opuntiae Sacc., cladode rot. Md., Pa. (2), Kans., Hawaii. See also Physalospora.
Diplotheca tunae (Spreng.) Starb., black spot. P.R. (3)
Erwinia aroideae (Town.) Holland, bacterial rot. Fla., Miss., Okla., Tex. (spp.)

OPUNTIA cont.

Gloeosporium cactorum Ston., zonate spot. Fla., Miss. (sp.); P.R. (3).

G. lunatum Ell. & Ev., anthracnose. Ala., Fla., Tex., P.R. (2,3, 5,6). Probably the conidial stage of Mycosphaerella opuntiae.

G. opuntiae Ell. & Ev. (? Glomerella cingulata (Ston.) Spauld. & Schrenk), on cladodes. Miss., Mo., N.J.

Hendersonia opuntiae Ell. & Ev., "sun scald", scorch (? secondary). N.J. (2), Ala. (5), Tex. (6), Mont. (7). Kans., Tex. (sp.)

Heterodera marioni (Cornu) Goodey, root knot. Miss., Ore.

Hyponectria cacti (Ell. & Ev.) Seaver, on cortex. Ala. (5)

Lembosia cactorum Tracy & Earle, black mildew. Fla. (2)

Leptosphaeria opuntiae Dodge, on cortex. Ala. (5), Tex. (6)

Macrophoma opuntiicola (Speg.) Sacc. & Syd., cladode spot. Hawaii (sp.)

Mycosphaerella opuntiae (Ell. & Ev.) Dearn. (? Gloeosporium lunatum Ell. & Ev.) Anthracnose, black rot. Ala. (7), Fla. (2,3), La. (sp.), N.Y. (2), S.Car. (sp.), Tex. (6), P.R. (3)

(Perisporium wrightii Berk. & Curt.): Stevensea w.

Phoma sp. (? Phyllosticta cacti), cladode rot. Okla. (2)

Phyllosticta cacti (Berk.) Archer, cladode spot. N.Mex.

P. concava Seaver (= P. cacti ?), dry rot. Mo., N.J., Okla., Tex.

Physalospora obtusa (Schw.) Cke., black rot. N.Y. (2)

P. rhodina (Berk. & Curt.) Cke. Fla. (2)

Phytophthora parasitica Dast., stem rot. N.Y., P.R.

Pythium debaryanum Hesse, stem rot. Calif.

Septoria fici-indicae Vogl., cladode spot. P.R. (3), Tex.

Sphaeropsis opuntiae Fairm. See Physalospora obtusa.

Stevensea wrightii (Berk. & Curt.) Trott., black spot. Fla. (1,2), P.R. (3), Tex. (4,6, sp.)

Teichospora mammoides Ell. & Ev. var. opuntiae Dearn. & Barth., on cortex. Calif. T. opuntiae Ell. & Ev. Colo.

Tretopileus opuntiae Dodge, on cladodes. Fla. (1)

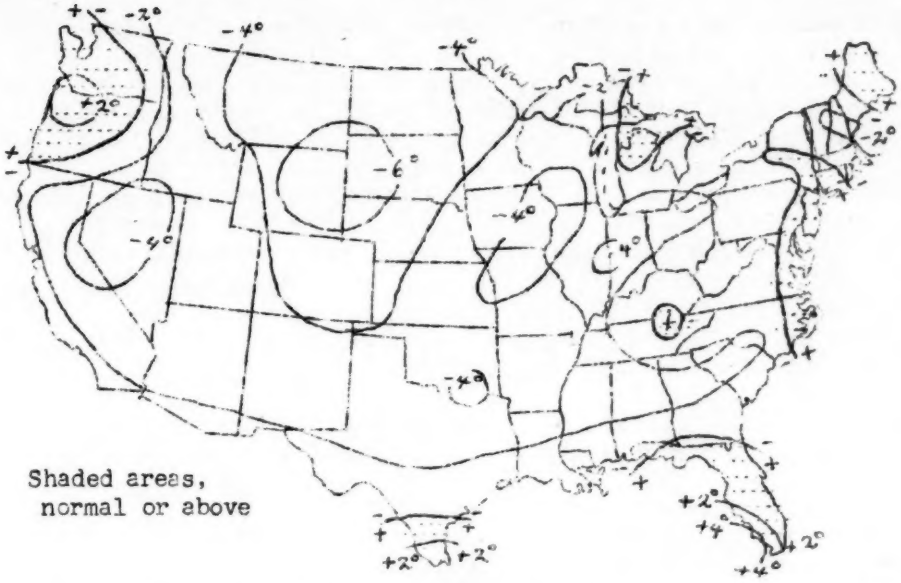
Vermicularia cacti (Schw.) Starb. See Colletotrichum.

Mosaic -- undetermined virus. Md.

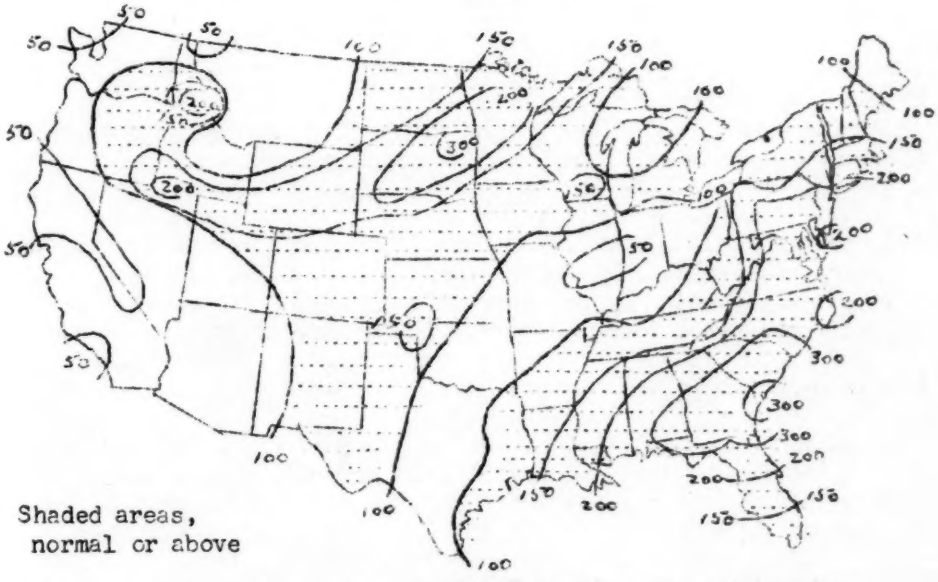
"Glassiness" -- physiological, perhaps a form of oedema and caused by water suffusion, Occasional in greenhouse or indoor culture.

Scab -- cause unknown, perhaps a form of oedema. Occasional in indoor culture.

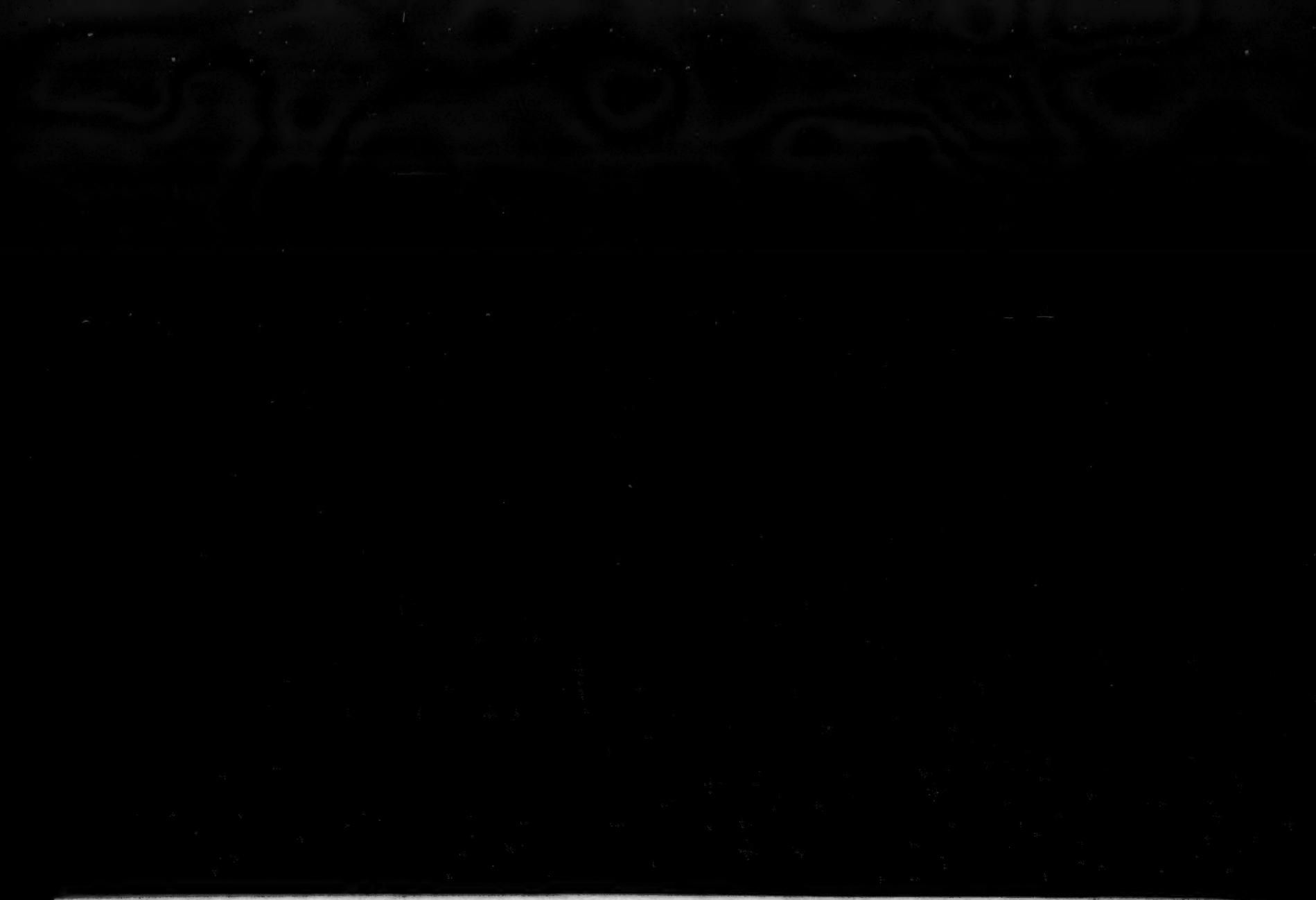
DIVISION OF MYCOLOGY AND DISEASE SURVEY



Map I. Departure of Mean Temperature from Normal, November 1947



Map II. Percentage of Normal Precipitation, November 1947

NOVEMBER WEATHER

From U. S. Department of Commerce, Weather Bureau, Weekly Weather and Crop Bulletin for week ending December 2, 1947.